



## Letter to the Editor

Alfredo Maldonado-Barrueco   
David Grandioso-Vas   
Mario Ruiz-Bastián   
Juana Cacho-Calvo  
Carlos Toro  
Inmaculada Quiles-Melero 

# *Mycobacterium abscessus* subsp. *massiliense* causing Bartholinitis infection: A case report

Clinical Microbiology Department. Hospital University La Paz. Madrid, Spain

### Article history

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Sir,

A 27-year-old immunocompetent female from Madrid (Spain) came to the Gynecological Emergency Department (GED) in February 2022 due to the presence of an abscess in the left major labia of the vagina after ten days of evolution without previous antimicrobial treatment. Previous relevant medical events included a mammoplasty and liposculpture some years ago. Seventeen days previously, the patient had undergone a vaginal mesotherapy session in an aesthetic clinic. This procedure involves the use of subcutaneous needles in order to inoculate substances that promote tissue regeneration. On physical examination, the patient presented an edematous abscess of approximately 7 centimeters in diameter, painful on palpation, warm, erythematous, and fluctuant with no spontaneous drainage point. The clinical picture was compatible with complicated abscessed folliculitis. The patient was diagnosed with a Bartholin gland cyst and cellulitis in her right major labia. Blood examinations did not show any relevant data, only a discreet elevation of leukocytes of 9,220 (reference range 4,800–15,000) cells/mm<sup>3</sup>, neutrophil (68%), and a low increase of protein-C-reactive of 14.9 (reference range <1–0.5) mg/dL. At the moment in GED, the patient underwent drainage of the abscess through an incision of 1 cm in diameter with the marsupialization of the Bartholin gland because of drain of approximately 15 mL of purulent material. The patient was discharged with a 300mg/12h clindamycin prescription for seven days until a follow-up visit for suspected *Staphylococcus aureus* infection. The abscess was cultured on blood and chocolate agar (Becton Dickinson, New Jersey, USA) incubated for five days in aerobic conditions at 37°C and 5% CO<sub>2</sub> atmosphere. Moreover, thioglycolate medium (Becton Dickinson) was incubated in aerobic conditions at 37°C.

The direct sample gram stain did not reveal any structure resembling microorganisms, but showed the presence of leukocytes. However, in the blood agar medium growth of small, dry, and white colonies were observed after 72 hours of incubation. Due to the appearance of colonies, we performed an auramine stain because of higher sensitivity. To confirm the auramine stain results, Ziehl-Neelsen stain from the blood agar colonies was also performed. Both stains were positive for acid-fast rods. Seven days later the patient had to return for a switch of treatment due to the presence of left inguinal adenopathies and microbiological findings.

The dry and white colonies were identified as *Mycobacterium abscessus* subspecies using Matrix Assisted Laser Desorption/Ionization-Mass Spectrometry (MALDI-TOF MS Bruker, Massachusetts, USA) following the protocol proposed by Alcolea-Medina *et al* [1]. To confirm the result, PCR Genotype *Mycobacterium* CM v.2.0 (Hain Lifescience GmbH, Nehren, Germany) was performed from the isolate. *M. abscessus* subsp. *massiliense* was identified using the PCR Genotype *Mycobacterium* NTM-DR v.1.0 kit (Hain Lifescience GmbH) without detection of mutations related to macrolide or aminoglycoside resistance.

The analysis of antibiotic susceptibility for *M. abscessus* subsp. *massiliense* was performed using the Epsilon-test method (E-TEST, BioMérieux®, Marcy-l'Étoile, France) showed resistance to imipenem (>32 mg/L) and linezolid (>256 mg/L), but susceptible to clarithromycin (0.25 mg/L) and amikacin (16 mg/L) using the ECOFF EUCAST breakpoints [2].

Cutaneous mycobacterial infections show clinical presentations, such as cellulitis, nonhealing ulcers, subacute or chronic nodular lesions, abscesses, superficial lymphadenitis, or verrucous lesions [3]. These infections include a group of three diseases categories: cutaneous infections causing by *M. tuberculosis* subspecies, leprosy disease caused by *M. leprae* or *M. lepromatosis*, and cutaneous infections produced by non-tuberculosis mycobacteria (NTM) including rapidly and slow growing mycobacteria [3].

### Correspondence:

Alfredo Maldonado-Barrueco.  
Clinical Microbiology Department. Hospital Universitario La Paz. IdiPAZ. Paseo de La Castellana 261, 28046, Madrid, Spain  
E-mail: alfredo.maldonado@salud.madrid.org.

The cutaneous NTM infections are related to invasive surgical or medical-aesthetic procedures such as acupuncture, tattoos, plastic surgery, piercings, pedicure sessions, mesotherapy (as our case reported), surgeries, and in processes including the trauma of the skin [3,4]. *M. abscessus* subspecies first identified in a patient with a knee infection and subcutaneous abscesses in 1950 [5]. *M. abscessus* subspecies pathogens are considered saprophytes and can be found in water, soil, organic matter, or vegetables being the environment the main source of infection. However, *M. abscessus* subspecies have been implicated as causal agents of wound and soft tissue infections, especially in immunocompromised patients such as HIV-patients, organ transplants, cancer or patients undergoing treatment with biological drugs [6]. We report, as our knowledge, the first Bartholinitis caused by *M. abscessus* subsp. *massiliense* using the terms "*Mycobacterium*", "*abscessus*", and "*Bartholinitis*" on PubMed or Medline database.

*Mycobacterium/Mycobacteroides abscessus* subspecies includes by sequencing *M. abscessus* subsp. *abscessus*, *M. abscessus* subsp. *massiliense*, and *M. abscessus* subsp. *bolletii*. *M. abscessus* subsp. *abscessus* is more frequently isolated in respiratory samples [7]. However, *M. abscessus* subsp. *massiliense* is more common in soft-tissue infections [8]. In contrast to the slow growing NTM, rapidly growing NTM such as *M. abscessus* subspecies can be grown in conventional media such as blood or chocolate agar in 3–5 days of incubation, Löwenstein-Jensen medium or Bactec mycobacterial growth indicator MGIT 960 system (BD Diagnostic Systems, Sparks, MD) [5]. However, cutaneous abscesses should be cultured at 30°C and 37°C for differential diagnoses with another NTM such as *Mycobacterium marinum*, among others [3].

*M. abscessus* subspecies are intrinsic resistant to anti-tuberculosis treatment such as rifampicin, isoniazid, ethambutol, and pyrazinamide. The presence of lipid-rich cell envelope forms an important barrier to antibiotic penetration with the presence of efflux transmembrane proteins [8]. The subspecies identification of *M. abscessus* is necessary to anticipate the macrolide antimicrobial resistance [8]. *M. abscessus* subsp. *abscessus* and *M. abscessus* subsp. *bolletii* present a functional inducible erythromycin ribosome methyltransferase *erm* (41) generating a macrolide-resistant phenotype acting at the adenine at position 2058 (A2058) of the 23S rRNA [9,10]. However, *M. abscessus* subsp. *massiliense* presents a non-functional *erm* (41) gene with two deletions making clarithromycin a useful drug for the treatment of this subspecies [11]. The genotypic analysis performed in our laboratory confirmed the susceptibility to macrolides. Moreover, the phenotypic analysis using gradient diffusion showed *in vitro* susceptibility to clarithromycin. However, phenotypic analysis using other methods than broth microdilution can show low reproducibility and low "*in vitro*" and "*in vivo*" correlation [10]. In the second visit, the treatment of the patient was switched, according to the susceptibility, to oral clarithromycin 500 mg/12h for six months and IV amikacin. *M. abscessus* infections should be treated with at least two or three antibiotics due to the *M. abscessus* subspecies multidrug resistance. Unfortunately, the

patient did not return to the gynecology department for follow-up and we have no information on the success of the *M. abscessus* treatment.

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None to declare

## CONFLICTS OF INTEREST

The authors declare no conflicts of interest

## REFERENCES

- Alcolea-Medina A, Fernandez MTC, Montiel N, Garcia MPL, Sevilla CD, North N, et al. An improved simple method for the identification of Mycobacteria by MALDI-TOF MS (Matrix-Assisted Laser Desorption- Ionization mass spectrometry). *Sci Rep* 2019;9:20216. <https://doi.org/10.1038/s41598-019-56604-7>.
- The European Committee on Antimicrobial Susceptibility Testing. Breakpoint tables for interpretation of MICs and zone diameters. Version 14.0, 2024. <http://www.eucast.org>.
- Franco-Paredes C, Marcos LA, Henao-Martinez AF, Rodríguez-Morales AJ, Villamil-Gómez WE, Gotuzzo E, et al. Cutaneous Mycobacterial Infections. *Clin Microbiol Rev*. 2018;32(1):e00069-18. <https://doi.org/10.1128/CMR.00069-18>.
- Rodríguez-Cerdeira C, Hernández-Castro R, Sánchez-Cárdenas CD, Arenas R, Meza-Robles A, Toussaint-Caire S, et al. Atypical Mycobacteriosis Due to *Mycobacterium abscessus* subsp. *massiliense*: Our Experience. *Pathogens* 2022;11:1399. <https://doi.org/10.3390/pathogens11121399>.
- Mougari F, Guglielmetti L, Raskine L, Sermet-Gaudelus I, Veziris N, Cambau E. Infections caused by *Mycobacterium abscessus*: epidemiology, diagnostic tools and treatment. *Expert Rev Anti Infect Ther*. 2016;14:1139–54. <https://doi.org/10.1080/14787210.2016.1238304>.
- Rodríguez-Cerdeira C, Hernández-Castro R, Sánchez-Cárdenas CD, Arenas R, Meza-Robles A, Toussaint-Caire S, et al. Atypical Mycobacteriosis Due to *Mycobacterium abscessus* subsp. *massiliense*: Our Experience. *Pathogens* 2022;11:1399. <https://doi.org/10.3390/pathogens11121399>.
- Goto A, Ando M, Komiya K, Matsumoto H, Fujishima N, Watanabe E, et al. *Mycobacterium abscessus* subsp. *abscessus* empyema complicated with subcutaneous abscess. *J Infect Chemother*. 2020;26:300–4. <https://doi.org/10.1016/j.jiac.2019.09.006>.
- Realegeno S, Mirasol R, Garner OB, Yang S. Clinical Whole Genome Sequencing for Clarithromycin and Amikacin Resistance Prediction and Subspecies Identification of *Mycobacterium abscessus*. *J Mol Diagn*. 2021;23:1460–7. <https://doi.org/10.1016/j.jmoldx.2021.07.023>.
- Nash KA, Brown-Elliott BA, Wallace RJ. A Novel Gene, *erm* (41), Confers Inducible Macrolide Resistance to Clinical Isolates of *Mycobacterium abscessus* but Is Absent from *Mycobacterium che-*

*lonae*. Antimicrob Agents Chemother 2009;53:1367–76. <https://doi.org/10.1128/AAC.01275-08>.

10. Choi G-E, Shin SJ, Won C-J, Min K-N, Oh T, Hahn M-Y, et al. Macrolide Treatment for *Mycobacterium abscessus* and *Mycobacterium massiliense* Infection and Inducible Resistance. Am J Respir Crit Care Med 2012;186:917–25. <https://doi.org/10.1164/rccm.201111-20050C>.
11. Woods GL, Bergmann JS, Witebsky FG, Fahle GA, Boulet B, Plaunt M, et al. Multisite Reproducibility of Etest for Susceptibility Testing of *Mycobacterium abscessus*, *Mycobacterium chelonae*, and *Mycobacterium fortuitum*. J Clin Microbiol 2000;38:656–61. <https://doi.org/10.1128/JCM.38.2.656-661.2000>.